OCR Computer Science A Level 2.2.1 Programming Techniques

Flashcards

Name the three programming constructs

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Sequence, branching and iteration.

Which two categories of loop is iteration split up into?

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- Count-controlled
- Condition-controlled

Describe how the branching programming construct works

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A certain block of code is run if a specific condition is met, using IF statements.

What is recursion?

What is recursion?

A programming construct in which a subroutine calls itself during its execution until the stopping condition is met.

What is the base case in recursion?

What is the base case in recursion?

A condition that must be met in order for the recursion to end.

State two advantages of recursion

State two advantages of recursion

- Can be represented in fewer lines of code
- Easier to express some functions recursively than using iteration

State a disadvantage of recursion

State a disadvantage of recursion

- Inefficient use of memory

- Danger of stack overflow

- Difficult to trace

Give two pieces of information that are stored on the call stack

Give two pieces of information that are stored on the call stack

Two from:

- Parameters

- Return addresses

- Local variables

Define scope

Define scope

The section of the program in which a variable is accessible.

Give two advantages of using local variables over global variables

Give two advantages of using local variables over global variables

Two from:

- Less memory is used

- Self-contained so unaffected by code outside of the subroutine

- Take precedence over global variables with the same name

What is top-down design?

What is top-down design?

A technique used to modularise programs in which the problem is continually broken down into sub-problems, until each can be represented as an individual, self-contained module which performs a certain task.

State two advantages of a modular design

State two advantages of a modular design

Two from:

- Makes a problem easier to understand and approach
- Simpler to divide tasks between a team
- Easier to manage project
- Self-contained modules simplify testing and maintenance
- Greater reusability

Give another name for top-down design

Give another name for top-down design

Stepwise refinement

What is the difference between procedures and functions?

What is the difference between procedures and functions?

Functions must always return a single value while a procedure does not always have to return a value.

What does it mean to pass a parameter to a subroutine by reference?

What does it mean to pass a parameter to a subroutine by reference?

The address in memory of the parameter is passed to the subroutine so its value outside of the subroutine will be updated.

State two features of IDEs

State two features of IDEs.

Two from:

- Stepping

- Variable watch

- Breakpoint

- Source code editor

- Debugging tools

What does IDE stand for?

What does IDE stand for?

Integrated Development Environment

What is encapsulation in object-oriented programming?

What is encapsulation in object-oriented programming?

When attributes are declared as private so can only be accessed and edited by public methods.

Describe the purpose of encapsulation in object-oriented programming

Describe the purpose of encapsulation in object-oriented programming

Program complexity is reduced by protecting data from being accidentally edited by other parts of the program.